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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/035,906   | 12/31/2001  | Steven M. Penn       | TI-32220            | 2192             |
| 23494  | 7590        | 10/10/2003           | EXAMINER            |                  |
| TEXAS INSTRUMENTS INCORPORATED<br>P O BOX 655474, M/S 3999<br>DALLAS, TX 75265 |             |                      | CURTIS, CRAIG       |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2872                |                  |

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
10/035,906

Applicant(s)  
Penn

Examiner  
Craig Curtis

Art Unit  
2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Dec 31, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-19 is/are rejected.
- 7) ☒ Claim(s) 6-9 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 6) ☐ Other:

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## *DETAILED ACTION*

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. More specifically, the meaning of the limitation "...formed of a single optical piece having a slit cut therein to separate the reflecting element from the lens element." cannot be ascertained. That is, it is unclear how said optical component can be formed of a *single* optical piece when said "single" optical piece has a slit cut therein (actually *therethrough*, if said "single" optical piece is accurately depicted in Figs. 2-5). (Emphasis added.)

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Winston et al. (5,303,322).**

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With regard to claim 1, Winston et al. disclose the invention as claimed--[a]n optical component (10 in Fig. 2K) comprising:

a) a reflecting element (12) having at least one substantially planar surface (viz., the lowermost surface (hypotenuse) of 12 abutting the uppermost surface of 43); and

b) a lens element (43) having at least one substantially planar surface (as above), the lens element being positioned relative to the reflecting element whereby the at least one substantially planar surface of the lens element is adjacent and substantially parallel to the at least one substantially planar surface of the reflecting element (see Fig. 2K), the lens element also having a curved surface (44) for focusing light passing through it. See Fig. 2K.

With regard to claim 2, Winston et al. further disclose wherein the optical component is formed of a single optical piece having a slit cut therein to separate the reflecting element from the lens element (i.e., in the same manner as that taught by the instant invention; in addition, please see the rejection of claim 2 under 35 U.S.C. 112, second paragraph, set forth above; and finally, please see col. 2, ll. 21-23.).

With regard to claim 5, since Winston et al. disclose (as required by claim 2 of the instant invention) wherein said optical element is formed of a single optical piece having a slit cut therein to separate said reflecting element from said lens element (as is indeed the case, as set forth above), then said reflecting element necessarily is of a piece with said optical element, and since said optical element includes a lens element, it then follows that said reflecting also has a lens surface.

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### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

#### **3. Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winston et al. (5,303,322) in view of Poradish et al. (5,905,545).**

Winston et al. disclose the claimed invention as set forth above **EXCEPT FOR** explicit teachings of the following additionally recited limitations: wherein said optical component is formed by affixing the first optical piece to the second optical piece (1) with an air gap between them & (2) with spacers positioned between their respective substantially planar surfaces. Winston et al. do however explicitly disclose wherein two optical elements (e.g., 61 & 70 in Fig. 6A) are both affixed with an air gap (see col. 12, ll. 39-56) as well as spacers (68) between them.

Poradish et al., on the other hand, disclose wherein an optical component (viz., TIR prism 28a in Fig. 2) is formed by affixing a first optical piece to a second optical piece such that both spacers (27a & 27b in Fig. 2a) and an air gap are between them. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the invention of Winston et al. such that said optical component of claim 1 be formed by affixing said reflecting element and said lens element with an air gap as well as spacers between them, as motivated by Poradish et al., for at least ensuring that,

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when the critical angle is satisfied, total internal reflection take place within said reflecting element as depicted in Fig. 2K of Winston et al. but not made explicit in the text associated therewith in the reference.

**4. Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poradish et al. (5,905,545).**

With respect to claims 10-12, Poradish et al. disclose the invention as claimed--a reflective substrate (part of DMD SLM 30a) mounted in a semiconductor package having an opening through which light beams may pass (inherent); a reflecting element (portion of TIR prism 28a nearest SLM 30a); a lens element having at least one substantially planar surface (see surface beneath uppermost curved portion of TIR prism 28a's lens element in Fig. 2), the lens element being positioned relative to said reflecting element whereby the at least one substantially planar surface of the lens element is adjacent and substantially parallel to said at least one substantially planar surface of said reflecting element (see Fig. 2), the lens element also having a curved surface for focusing light passing through it (Id.)--**EXCEPT FOR** an explicit teaching wherein, with respect to claim 10, said reflective element is mounted to said opening of said semiconductor package; wherein, with respect to claim 11, a clear window be mounted in the opening and wherein said reflecting element is affixed to the optical component above the clear window; and wherein, with respect to claim 12, said reflecting element is mounted directly into said opening.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, however, to have mounted (1) said reflective element to said opening of said semiconductor package, (2) a clear window in said opening, wherein said reflecting element be affixed to said optical

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component above said clear window, and (3) said reflecting element be mounted directly into said opening, since it has been held that forming in one piece an article that has formerly been formed in two or more pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

With respect to claims 13-19, the structural-element teachings by Poradish et al. implicitly encompass the method step teachings recited in these claims. More specifically with respect to claims 17 and 18, said lens element of said single integrated optical component can, depending on the relative placement of projection lenses 32a & 32b, be deemed as being positioned either/both telecentrically or non-telecentrically relative to said reflection path from said spatial light modulator.

### *Allowable Subject Matter*

5. Claims 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### *Reasons for Allowance*

6. The following is an Examiner's statement of reasons for allowance:

The claims would be allowable over the prior art for at least the reason that the prior art fails to teach or to reasonably suggest *wherein said reflective element is, inter alia, circularly symmetrical, and having a conical indentation within the upper portion that serves as a TIR element*, as set forth in the claimed combination.

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7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee.

Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Contact Information*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7722.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

A large, stylized handwritten signature in black ink, appearing to read 'Audrey Chang'.

**Audrey Chang  
Primary Examiner  
Technology Center 2800**

*C.H.C.*

Craig H. Curtis  
Group Art Unit  
29 September 2003